

Research and Development controls three of the four buying criteria:

MTBF or Mean Time Before Failure is a reliability measure. It indicates the number of hours a product will work before it breaks.

The Industry Conditions Report discusses segment drift [This 'drift' is can be seen on the perceptual map through the rounds as](#) customers want smaller, faster sensors.

Updating Performance and Size repositions your product on the Perceptual Map. This lets your company keep up with the changing needs of your customers.

When [an R&D](#) project is completed, customers adjust their perception of your product's age. They mentally cut it in half, because they perceive the product as newer.

If a product has an age of four years just before a revision, customers will perceive it to be two years old just after the revision.

The Age profile chart shows each product's age from January through December. If the line drops, it is because the product was revised and customers see it as newer.

Products that were just invented have an age of zero.

Let's revise a product in R&D by entering new coordinates for Performance and Size.

The product's name now appears twice. The magenta-colored name shows where the product will be after revision. The black name shows its current position.

The farther the distance between the black and magenta names, [in other words, the greater the technological advance](#), the longer the [product will be in development](#).

The more R&D projects the department is working on, the longer each [project will take, as limited resources are split between products](#).

If a project isn't completed by the end of the year, you will not be able to [revise](#) the product next year.

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So it might be smart to split a long project into two parts, with the first completing just before the end of the year.

Lower technology products have lower material costs than higher technology products.

Products with higher MTBFs also have higher material costs. Each thousand hours of reliability costs 30 cents in material.

To adjust reliability, enter a new MTBF.

Inventing a product starts by entering a name. The first letter of the product must match the first letter of the company name. Then enter a size, performance and MTBF.

All new products require capacity and automation, which must be purchased by the Production Department one year before the product's release. R&D and Production must work together.

R&D also has to work with Marketing. Marketing can't sell a product if R&D invents or revises something that no one wants. Together, the departments can identify and target customer demands for product positioning and MTBF.

These are reported in the Industry Conditions Report and the segment analysis pages of the Capstone Courier.<for Capstone>

For each segment, customers want products inside the solid circle, which marks the positioning fine cut. They prefer products near the dot, which is called the ideal spot. They aren't as interested in products placed in the dashed outer circle, which marks the Positioning Rough Cut. They have no interest in products that are outside of the circles.

The same holds for MTBF.<pause> Each segment has an expected range. If you go below or above the range, you are offering reliability levels that don't match your customers' needs or expectations. Your products move into the MTBF Rough Cut.

In a Seller's Market, when there are not enough products to meet demand, customers will buy anything they can, even if the positioning and MTBF are in the rough cut.

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[Good](#) Luck!